The plasma road to sustainable chemical conversion workshop

Schedule of the workshop:

Sunday 3rd September		Monday 4th September		Tuesday 5th September	
18:00 – 20:00	*Reception*	8:30 – 9:00	*Opening address*	9:00	Richard van de Sanden
		9:00	Mikhail Benilov	9:25	Ahmed Gohniem
		9:25	Ante Hecimovic	9:50	Juan Pablo Trelles
		9:50	Timo Gans	10:15	Paolo Tosi
		10:15 – 12:15	*Poster Session*	10:40 – 11:00	*Coffee break*
				11:00	Annemie Bogaerts
		12:15 – 14:00	*Lunch break*	11:25	Gerard van Rooij
		14:00	Ana Morillo-Candas	11:50	Milan Simek
		14:25	Nikolay Britun	12:15	Tiago Dias
		14:50	Maik Budde	12:40 – 14:30	*Lunch break*
		15:15	Daniela Pietanza	14:30	Svetlana Starikovskaia
		15:40 – 16:00	*Coffee break*	14:55	Dmitry Lopaev
		16:00	Dmitry Voloshyn	15:20	Pedro Viegas
		16:25	Tomoyuki Murakami	15:45	Eric Moreau
		16:50	Nuno Pinhão	16:10 - 16:30	*Coffee break*
		17:15	Vasco Guerra	16:30	Peter Bruggeman
				16:55	Rony Snyders
				17:20	Tiago Silva
				17:45 – 18:00	*Closing session*

Program

- Sunday, September 3rd

18:00 – 20:00 Reception

- Monday, September 4th

08:30 – 09:00 *Opening Address*

09:00 – 09:25 **Mikhail Benilov** Modelling low-current quasi-stationary gas discharges: mathematical aspects and a practical guide.

09:25 – 09:50 **Ante Hecimovic** Advances in CO_2 plasma conversion at atmospheric pressure and oxygen separation.

09:50 – 10:15 **Timo Gans** Self-limiting trade-off between CO yield and CO_2 conversion energy efficiency in atmospheric pressure Ar-CO_2 plasmas: picosecond laser spectroscopy.

10:15 – 12:15 *Poster session*

12:15 – 14:00 *Lunch break*

14:00 – 14:25 **Ana Morillo-Candas** Strategies to enhance the CO_2 conversion in low temperature plasmas studied by isotope tracing.

14:25 – 14:50 **Nikolay Britun** A comprehensive characterization of a He-based atmospheric nanosecond jet discharge for gas conversion.

14:50 – 15:15 **Maik Budde** Importantly rather than Impurity – Additional gases in CO_2 plasma conversion.

15:15 – 15:40 **Daniela Pietanza** On the coupling of vibrational and electronic kinetics with the electron energy distribution function for plasma assisted CO_2.

15:40 – 16:00 *Coffee break*

16:00 – 16:25 **Dmitry Voloshyn** Ozone kinetics in the afterglow of a pulse-modulated DC discharge in O_2 an experimental and modelling study of surface mechanisms and ozone vibrational kinetics.

16:25 – 16:50 **Tomoyuki Murakami** Numerical simulation and complex network analysis of reacting chemistry in plasma treated water.

16:50 – 17:15 **Nuno Pinhão** Vibrational cross sections of methane: from individual cross sections to polyad groups.

17:15 – 17:40 **Vasco Guerra** Development of reaction mechanisms for plasma chemistry.

- Tuesday, September 5th

09:00 – 09:25 **Richard van de Sanden** Plasma conversion of CO_2, N_2/O_2 & CH_4.

09:25 – 09:50 **Ahmed Gohniem** Combustion and Energy Processes and the Role of Plasma.

09:50 – 10:15 **Juan Pablo Trelles** Microwave Plasma CO_2 Conversion Enhanced by Concentrated Solar Radiation.

10:15 – 10:40 **Paolo Tosi** Investigation of plasma activation mechanisms of highly stable molecules in atmospheric pressure plasmas.

10:40 – 11:00 *Coffee break*

11:00 – 11:25 **Annemie Bogaerts** Electrification of chemical reactions.

11:25 – 11:50 **Gerard van Rooij** Methane Plasma Chemistry to aid the Energy and Materials Transition in the Process Industry

11:50 – 12:15 **Milan Simek** Streamer-based discharge on water surface for nitrogen fixation - a diagnostic study.

12:15 – 12:40 **Tiago Dias** A close look at time-locality assumptions on the modelling of nanosecond-pulsed discharges.

12:40 – 14:30 *Lunch break*

14:30 – 14:55 **Svetlana Starikovskaia** O_2 dissociation at moderate pressures: are there advantages of high electric fields and high specific energy input?

14:55 – 15:20 **Dmitry Lopaev** Dynamics of negative ions in dc O_2 discharge.

15:20 – 15:45 **Pedro Viegas** Plasma-induced reversible surface modification and its impact on oxygen heterogeneous recombination.

15:45 – 16:10 **Eric Moreau** How the ionic wind can used for airflow control and EHD propulsion, and how it could improve the efficiency of plasma reactors.

16:10 – 16:30 *Coffee break*

16:30 – 16:55 **Peter Bruggeman** Pathways for Nitrogen Fixation by Plasma Catalysis.

16:55 – 17:20 **Rony Snyders** Experimental study of microwave and gliding arc plasma discharges utilized for the fixation of nitrogen into NO.

17:20 – 17:45 **Tiago Silva** Understanding nitrogen fixation while studying volume and surface kinetics in N_2-O_2 plasmas.

17:45 – 18:00 *Closing session*

Poster session

1. **Rui Almeida** Breakdown in axisymmetric device with dielectric spacer at 1 atm.
2. **Pedro Almeida** An extended Townsend criterion for multidimensional geometries.
3. **Nuno Ferreira** Modelling low-current periodic pulses in corona discharges.
4. **Ataollah Eivazpour** Stability of negative corona discharges at inception.
5. **Yuri Gorbanev** Nitrogen fixation by an arc plasma at elevated pressures.
6. **Vladislav Kotov** On reaching the strong $T \ll Tvibr$ vibrational non-equilibrium in CO.
7. **Igor Fedirchyk** Green H_2 synthesis from NH_3 cracking using plasma: Comparison between the performance of different plasma reactors.
8. **Pedro Viegas** Atomic wall recombination in oxygen plasmas.
9. **C. A. Aggelopoulos** Investigation of cold atmospheric plasma for environmental remediation/sanitation and materials activation/regeneration.
10. **Sergey Soldatov** CO_2 splitting in atmospheric microwave plasma sustained with ultra-fast energy pulsations.
11. **Aleksandr Pikalev** Plasma diagnostics for oxygen separation experiments.
12. **Abhyuday Chatterjee** Nitric oxide and O atomic density kinetics in a low pressure N_2-O_2 surfaguide microwave using Laser Induced Fluorescence.
13. **Lex Kuijpers** Determination of atomic oxygen density and reduced electric field in oxygen-containing plasmas through OES methods.
14. **Anja Herrmann** Mapping the density of Nitrogen radicals in RF inductively coupled flow Reactors.
15. **Lanie McKinney** Numerical Modeling of Plasma Reactors for CO_2 Conversion with Applications to Mars In-Situ Resource Utilization.
16. **Nuno Pinhão** Reforming of methane in a DBD reator: A reaction kinetics model
17. **T. P. W. Salden** The PIONEER database: introducing a platform for meta-analysis of CO_2 conversion experiments
18. **Tom Butterworth** Probing the dynamics of a gliding arc discharges in air.
19. **Gromov Mikhai** Insights into methane reforming to olefins via nanosecond pulse plasma.
20. **Dihya Sadi** Plasma/surface interaction for efficient CO_2 recycling: plasma-membrane coupling.
21. **Edmond Baratte** Experimental and numerical study of the conversion mechanisms in the low-pressure CO_2 -CH_4 glow discharge
22. **Tiago Silva** An assessment on vibrational rate coefficients with interest to chemistry of CO_2 plasmas.
23. **Kaja Primc** Rising EU climate targets to 55% GHG emissions reduction: Exploitation of emerging plasma-assisted sustainable resources for energy production
24. **Tiago C Dias** Effect of the magnetic field on the electron kinetics under AC/DC electric fields.